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14. ABSTRACT

This grant was for the purchase and installation of a Reaction Ion Etcher. The grant had a value of $100,000 and $93,600 was used to purchase a Model CS1701 Reaction Ion Etcher, single chamber system with capabilities for four reaction gases. Additionally, approximately $2,400 was spent on the purchase of regulators, gases, and other hardware necessary to make the RIE operational. A small amount of money was used to pay summer support for a graduate student to install and baseline the operation of the RIE. The RIE is fully functional and is a key piece of instrumentation the developing nano/micro electro mechanical systems laboratory, chich has recently been augmented by the donation from Motorola, Plantation, FL, of their complete MEMS facility, including an additional March RIE with metal etch capabilities, an OAI micro aligner, a class 100 clean room, an e-beam nanolithography system, and all other support equipment necessary to fabricate N/MEMS.

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Final Report

"Reaction Ion Etcher for MEMS Fabrication"

Grant No. F49620-01-1-0525

Submitted by
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Submitted To
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From the Proposal Abstract

The addition of an RIE will complete the required equipment to perform research in MEMS and nanotechnology. FIU possess the fabrication capabilities for a traditional silicon processing facility in the Future Aerospace Science and Technology (FAST) Center (an Air Force funded Center in superconducting microwave technology), the capability of fabricating meso-scale MEMS type devices from co-fire ceramic and assembling MEMS in the Electronics Packaging Laboratory and optical and device sensors applications in the Biomedical Research Institute. This addition will bring our fabrication and educational capabilities into the rapidly expanding area of nanofabrication and devices.

Results of the Grant

This grant was for the purchase and installation of a Reaction Ion Etcher. The grant had a value of $100,000 and $93,600 was used to purchase a Model CS1701 Reaction Ion Etcher, single chamber system with capabilities for four reaction gases. Additionally, approximately $2,400 was spent on the purchase of regulators, gases, and other hardware necessary to make the RIE operational. A small amount of money (approximately $4,000) was used to pay summer support for a graduate student to install and baseline the operation of the RIE. The RIE is fully functional and is a key piece of instrumentation in the developing nano/micro electro mechanical systems laboratory, which has recently been augmented by the donation from Motorola, Plantation, FL, of their complete MEMS facility, including an additional Marsh RIE with metal etch capabilities, an OAI micro aligner, a class 100 clean room, an e-beam nanolithography system, and all other support equipment necessary to fabricate N/MEMS devices. It should be noted that the grant for the RIE was the impetus for the donation, as Motorola was contacted to provide information on a suggested RIE and they recommended the Marsh system, which FIU bought. This began a working relationship that culminated in the donation of the equipment when the Motorola Plantation facility reorganized their research thrust and decided to consolidate MEMS efforts to other facilities, making their facility able to be donated.